

We claim:

1. The process for obtaining Fructooligosaccharide (FOS), said process comprising the steps of:
 - (a) growing the culture in a medium at pH in the range of 5 to 6 and temperature in the range of 25 to 30 °C under stirring condition to obtain an inoculum,
 - (b) transferring predetermined concentration of the inoculum to a medium under fermentation conditions to obtain Fructosyl Transferase (Ftase),
 - (c) incubating the Ftase with a substrate in the range of 400 to 800 g/l at pH in the range of 5 to 5.5 for 18 to 24 hrs at a temperature range of 50 to 55 °C, and
 - (d) optionally along with additives to improve quality of FOS.
2. The process as claimed in claim 1, wherein in step (a) the medium consists of sucrose in the range of 0.8 to 1.5 % and yeast extract in the range of 0.1 to 0.5 %.
3. The process as claimed in claim 1, wherein stirring in step (a) is done at 200 to 250 rpm for 24 to 48 hr.
4. The process as claimed in claim 1, wherein the culture used in step (a) is selected from group consisting of *Aspergillus oryzae* and *Aspergillus pullulans*, capable of producing FTase.
5. The process as claimed in claim 1, wherein the inoculum used is developed from 5 to 8 days old slant culture.
6. The process as claimed in claim 1, wherein the FTase is prepared by fermentation process selected from the group consisting of submerged fermentation process and solid state submerged process.
7. The process as claimed in claim 1, wherein the predetermined concentration of the inoculum varies in the range of 10 to 25 % (v/v) for submerged fermentation and in the range of 10 to 25 % (v/w) for solid state fermentation.

8. The process as claimed in claim 6, wherein the submerged fermentation medium consists of sucrose in the range of 10-12 %, yeast extract in the range of 0.7-0.9 %, $\text{MgSO}_4 \cdot 7\text{H}_2\text{O}$ in the range of 0.02-0.04 %, NaNO_3 in the range of 1-3 %, K_2HPO_4 in the range of 0.3-0.5 %, K_2HPO_4 in the range of 0.8-1.0 %, NaCl in the range of 0.5-0.7 % and NH_4Cl in the range of 0.9-1.2 % and incubated for 48 to 120 hr at a temperature ranging from 25-30 °C followed by discarding the pellets after filtering the culture broth to obtain Fructosyl Transferase (Ftase).
9. The process as claimed in claim 6, wherein the solid state fermentation medium consists of 10 to 12 gm of rice bran moistened with 10 to 12 ml water and incubated for 48 to 120 hr at a temperature ranging from 25-30 °C followed by extraction of moldy bran with water and filtering the same to obtain Fructosyl Transferase (Ftase).
10. The process as claimed in claim 1, wherein the FTase is incubated with the substrate selected from group consisting of sucrose, jaggery optionally along with stevia extract as an additive to improve the FOS sweetness.
11. The process as claimed in claim 10, wherein stevia extract is in the range of about 0.5 to 4 %.
12. The process as claimed in claim 11, wherein the stevia extract is about 1 %
13. The process as claimed in claim 10, wherein the increase in sweetness of FOS is about 40%.
14. The process as claimed in claim 11, wherein the increase in sweetness of FOS is about 36%.
15. The process as claimed in claim 1, wherein the FOS contains kestose and nystose with functional properties namely non-cariogenicity and prebiotic property.
16. The process as claimed in claim 1, wherein FOS improves mineral absorption, reduces the total cholesterol and triglyceride levels in the body.
17. The process as claimed in claim 1, wherein 2.5 to 20 % of FOS in diet improves the calcium absorption.
18. The process as claimed in claim 1, wherein 5 to 10 % of FOS in diet improves the magnesium absorption.

19. The process as claimed in claim 1, wherein upto 10 % of FOS in diet improves the copper absorption.
20. The process as claimed in claim 1, wherein 8 gm of FOS powder dose per day for weeks in the range of 5 to 5 reduces the cholesterol and triglycerides levels.
- 5 21. The process as claimed in claim 1, wherein FOS powder is obtained by spray drying of FOS at an inlet temperature ranging from 130 to 140 °C, outlet temperature ranging from 90 to 95 °C and at a flow rate of 60 to 70 ml/min.
22. The process as claimed in claims 1 and 21, wherein the FOS additives are selected from the group consisting of maltodextrin ranging upto 15 % and anti-caking agents namely tri-calcium phosphate ranging upto 2 % during either
10 before or after spray drying.
23. The process as claimed in claim 21, wherein FOS powder has dry matter content in the range of 98.6 to 98.8 %, ash content in the range of 0.4 to 1.0 % with solubility in the range of 95 to 96 % in cold water and 100 % in hot water.
- 15 24. The process as claimed in claim 21, wherein the additives improve the storage stability of the FOS powder and reduces the heat sensitively of FOS powder.
25. The process as claimed in claim 21, wherein the yield of FOS powder varies in the range of 50 to 96.5 %.
26. The process as claimed in claims 1 and 4, wherein the culture is recycled for
20 production of FOS.
27. The process as claimed in claim 25, wherein the culture is recycled atleast 6 times for production of FOS.